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An unending variety of topics

Monday, November 27, 2006

Are most of us a bit Neanderthal?

This month has thrown off quite a bit of new information on Neanderthals and on the possibility that they interbred with some of the humans that came out of Africa. It's bound to stir up controversy.

The first interesting recent study comes from extracting the remains of a probable Neanderthal DNA from 38,000 years ago, copying it into bacteria, and then sequencing it at leisure. (Query: do fundamentalists oppose this procedure as a forbidden "cloning of a human"?). This bacterial-Neanderthal chimera (actually, the Neanderthal genes are really just junk DNA from the point of view of the normally functioning bacteria) is an improvement over the traditional technique that apparently destroys the original DNA in the process of sequencing it. Preserving the DNA is vital for this application: Neanderthal DNA has been severely damaged by 38,000 years of chemistry and can only be obtained with severe difficulty in small fragments.

Large-scale statistical studies from these probable Neanderthal sequences suggest that the number of genes we moderns derive from Neanderthals is few, if any. In other words, all of us trace either nearly all or entirely all of our ancestry from *homo sapiens* originating in Africa c. 200,000 years ago rather than to Neanderthals that originated some 700,000 years ago. Pretty much what most scientists have thought for the last few decades.

However, that does not mean humans and Neanderthals didn't interbreed, and it doesn't mean that none of us got any important genes from them. There is some fossil evidence from Portugal and Romania suggesting human-Neanderthal hybrids. Even more startling is a study published this month showing that about 70% of modern humans possess a gene for brain development (this paper goes straight for the controversy jugular!) derived from an "archaic species of *homo*" rather than from our African *homo sapiens* ancestor. Since the time of "introgression" (cross-breeding between the archaic species and the African-derived modern species, *homo sapiens*) was about 37,000 years ago, and the gene is overly represented in Europe and Asia but uncommon in sub-Saharan Africa (I warned you about controversy!), it's a good guess that this gene was a "gift" from a sneaky Neanderthal to the second wave of modern humans to have left Africa, the ancestors of most modern Europeans and Asians. A gift that was positively selected -- it replaced its African-derived alternative almost everywhere they were in competition -- and with which most of us are now blessed. The Neanderthal DNA sequencing study shows that the African genes won the vast majority of the other competitions.

Posted by Nick Szabo at 11:25 PM

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Nick Szabo

"A premier thinker about history, law and economics, and the lessons they have for security." -- Adam Shostack, Emergent Chaos

"Szabo comes out with these essays that leave me in awe." -- Brian Dunbar

"Reading material that is eclectic, challenging and endlessly fascinating." -- Sean McGrath, Propylon

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